Transportation Planning Guidance
F. E. Warren Air Force Base
Cheyenne, Wyoming
April 2001

Whitefield W. Mayes, P.E.
Chief of Special Projects Office
Military Traffic Management Command
Transportation Engineering Agency
Newport News, VA

Study Objectives

- To determine road improvements needed to accommodate a consolidation of functions into the new Minuteman III Missile Service Complex (MIIIMSC) southeast of Bldg 1284.
- To review the traffic circulation patterns into and out of the 90 SFS HQ area and recommend road improvements.
- As time permits, to make traffic engineering recommendations that will increase motorists' safety.

90 SFS HQ
Building 34

Observations

- F. E. Warren AFB is a beautiful, historic base with two major east/west arterial streets, Randall Ave and Missile Dr, and several shorter north/south arterial and collector roads.
- The base street network follows many of the original street alignments and, as a result, there are many curving streets and odd-shaped intersections.
- Most base streets are in good condition and the vast majority of traffic control devices are properly designed and installed.
- Winter weather and snow removal has taken its annual toll on pavement markings.
- Traffic flows throughout the day with minimal congestion.

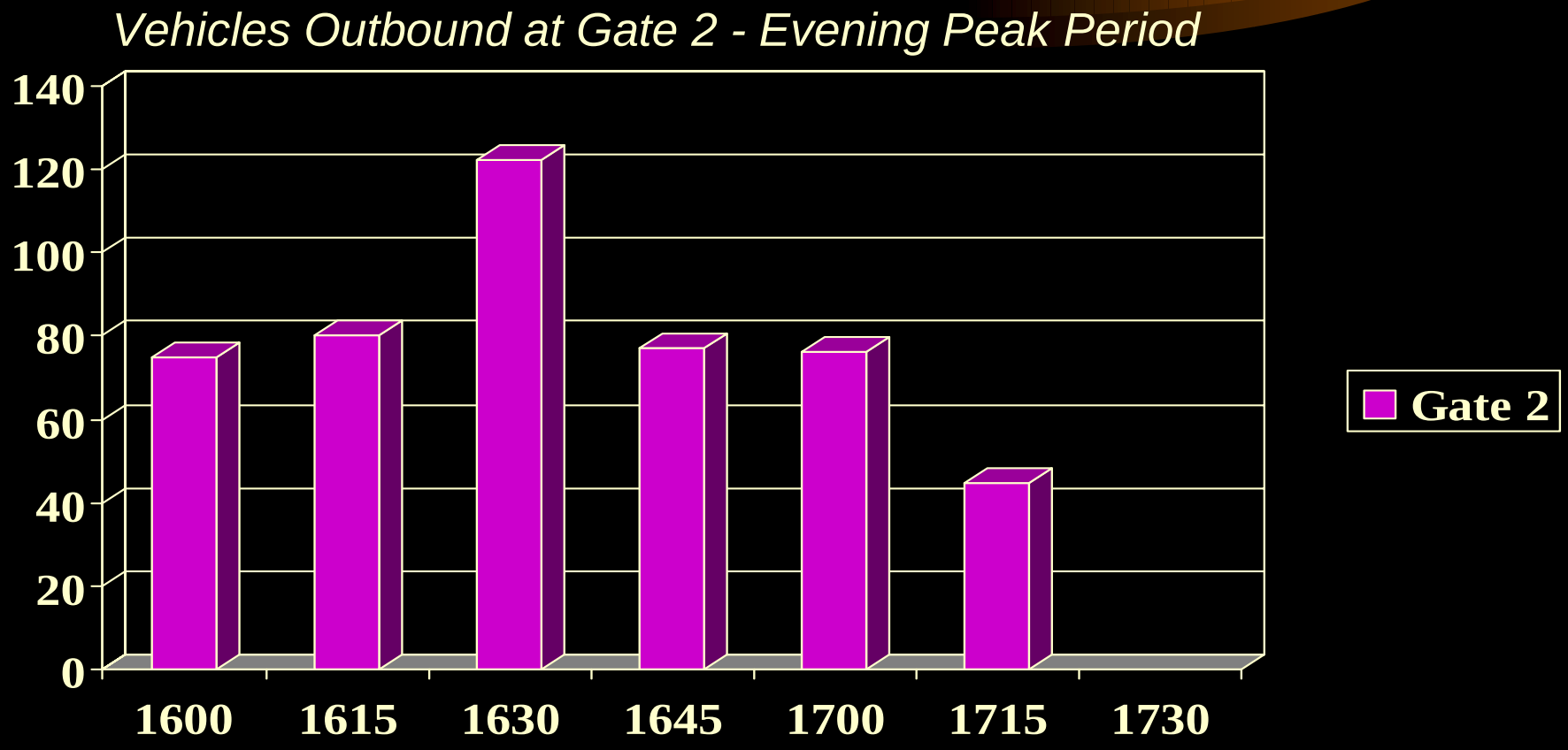
Observations (cont)

- During the evening peak hour, traffic flow peaked in the southwest portion of the base along Missile Dr immediately after the release of personnel at 1600 hrs. A second minor peaking after 1630 hrs was caused by the flow of vehicles from the Historic District using Missile Dr to exit at Gate 2.
- No delays exceeding 1 minute were observed.

Traffic Data

- Evening peak-hour traffic volumes of 500 vehicles were recorded on Missile Dr east and west of Old Glory Rd. Single lane directional volumes were 400 vehicles, well below the design capacity of 800 with moderate cross traffic and slightly below the 600 with considerable cross traffic.
- Morning peak-hour volumes on the west end of Missile Dr were about 80 percent of the evening peak hour count.
- The total peak-hour approach traffic at the 4-way Stop intersection of Missile Dr and S. Frontier Rd was 450 vehicles, with very balanced flow. This is well below the warrant for signalization, which is 1,000 vehicles.
- The base has a good traffic safety record. Of the 11 base intersections that were the site of one or more accidents during a recent annual period, no more than 2 occurred at any one location. The only parking lot with a concentration of accidents is at the BX, where 10 occurred.

Traffic Data (cont)



Future Impact

- The consolidation of functions into the MIIIMSC will add a maximum 150 employee trips per hour to Missile Dr during the morning and evening peak hours.
- Additional operational trips involving missile maintenance activities and code pick-up will occur throughout the day between the southwest (new facility) and east (existing facilities) portions of the base.
- The weekly movement (10-15 round trips) of payload transporters (PTs) and transporter erectors (TEs) will require larger than normal intersectional radii (22.7 M or 75 ft recommended) along their primary route.

Recommendations

South Base

- **Widen Missile Dr to 3 lanes (adding a westbound left-turning lane) between Old Glory and Artillery Rds.**
  - The growth in traffic meets the warrant for an additional lane with considerable interference with crossing/turning traffic in the BX area.
  - Large PTs and ETs (max 8.5 ft wide, 69 ft long) will be using this route and further supports the separation of opposing flows.
- **Widen Saber Rd between Commissary Rd and Missile Dr from 2 to 3 lanes to provide for 2 approach lanes to Missile Dr.**
  - Provide a 22.7 M (75 ft) radii in the southeast quadrant.
  - Position the Stop bar for the right approach lane 6 ft in advance of the adjacent left-turning approach lane Stop bar.

Recommendations (cont)

  - Provide a road width of 40 ft, with outer lanes of 14 ft to accommodate turning transporters and a middle lane of 12 ft.
  - Similarly, enlarge the proposed new radius at the intersection of Commissary and Saber Rds from 19.8 to 22.7 M (75 ft).
- **Consider eliminating the proposed single row of angled parking just east of Saber Rd between Bldg 1284 and the new MIIIMSC.**
  - This parking is located too close to a major collector road.
  - It has a poorly designed entrance.
  - Exiting vehicles will be difficult to see.
  - The area will benefit from additional open space.
  - If this lot is required, design a 14-ft entrance into the lot and eliminate two spaces at the exit to improve the sight distance.

Recommendations (cont)

- **Close the segment of Nebraska Ave between Post and Artillery Rds.**
  - This will remove potential obstructions from the helicopter clear zone and cause very little disruption to existing travel flow.
  - This also will reduce the cost of a proposed project to repave Nebraska Ave later this year.
- **Install automatic gates and signs to close off the segment of Artillery Rd between Nebraska Ave and Cheyenne Rd during STOL operations.**
  - Install STOP WHEN FLASHING signs (p. 16-2, MTMC Pam 55-14) at the gates and install LOW FLYING PLANES warning signs (p. A-10, MTMC Pam 55-14) in advance of the gates.
  - These actions will clear the glide slope during STOL aircraft operations while permitting Artillery Rd to continue to function as an alternate route to and from the Weapons Storage Area. (No other acceptable alternate route is available.)

Recommendations (cont)

Historic District

- **Modify the Garrison Loop project design by:**

  *** Eliminating the new 600-ft connector between Piute and Alden Drs.**

  *** Retaining more of the existing pavement on the west end of Alden Dr.**

  *** Closing 1 of 2 back yard drive entrances and planting evergreens on the N Champagne Dr segment west of Quarters 30, 36, and 38 to provide a buffer, improve aesthetics, and reduce traffic conflicts.**

  - It is **very important** not to allow N Champagne Dr to become a short cut between north base housing and Randall Ave, thus adding traffic by the 90 SFS HQ and close to several quarters.
  - Nearby Rogers Dr is a much better, wider roadway with good access onto Randall Ave, which is soon to be signalized.
  - No benefit is gained by the complete straightening of Alden Dr.
  - Cost of the total project will be reduced from $450,000 to about $250,000.

Recommendations (cont)

- **Prior to the demolition of the Shoppette, modify the traffic flow so that vehicles enter from the south and exit from the north.**
  - This pattern removes two major crossing conflicts on S Fort Steel Way and increases safety within the Shoppette area.
  - New ONE WAY signs must be clearly visible when approaching on S Fort Steel Way.
  - A one-way, northbound flow pattern at the pumps should be reinforced by painted pavement arrows.
- **Reduce the open expanse of pavement at the intersection of Park and Ft Warren Aves with curbed channelization, and establish a one-way flow into the adjacent parking lot.**
  - These actions will better define appropriate travel paths and greatly reduce the number and location of potential vehicle conflicts.
  - The intersection design will more closely resemble its original layout.

Recommendations (cont)

Minor safety recommendations

- **Sign the cemetery road to establish a one-way, counter-clockwise flow pattern.**
  - This will eliminate any right-of-way confusion by motorists traveling to and from the golf course.
- **Install reflectorized black and yellow, diagonal striping road hazard signs on guard rail ends, posts, underpass abutments, and other potential roadside hazards.**
  - For example, several roadside obstacles that can benefit from these signs are on Missile Dr, S Frontier Rd, and S Creek Dr.
- **Paint additional pavement turn arrows at signalized intersections to give more advance notice of permitted turning movements.**
- **Install a black-on-yellow, diamond DIP warning sign on southbound Old Glory Rd 150 ft in advance of the railroad tracks.**

Recommendations (cont)

- **During the next restriping of the BX parking lot, increase the module (aisle with 60 degree parking on each side) cross section width to 55 ft, with a stall width of 9.5 ft.**
  - One cause of the accidents in this lot is that some modules have a width of only 52 ft.
  - Design details can be found on p. 4-8, MTMCTEA Pam 55-17.

Quarters 2

Summary

- Should additional background information be desired or should questions arise related to design details, please contact Whit Mayes at 800.722.0727, 757. 599.1699, DSN 927-4848, or e-mail *mayesw@tea-emh1.army.mil*.

Long's Peak

Special Thanks

- **Technical Input and Logistical Support:**
  - 2LT John Costello, Civil Engineer; Kenneth Davis, Project Engineer; Darren Horstmeier, Community Planner; 90 CES; and MSgt Willie Reynolds, Logistics Group Representative, 90 LSS.
- **Data Collection:**
  - SRA Arther Harriss III, SRA Matthew Rowland, A1C Billy Smith III, A1C Jerrand Pinder, and A1C Justin Pummill; 90 CES.

Antelope grazing by S Frontier Rd